GENERAL DYNAMICS
C4 Systems

Land Warrior Design Considerations for Coalition Interoperability and Commonality

December 2004

Mike Stinson – General Dynamics C4 Systems

Jason Regnier – PEO Soldier

Matt Gillis – PEO Soldier (C)

TG-1 Organization and Membership

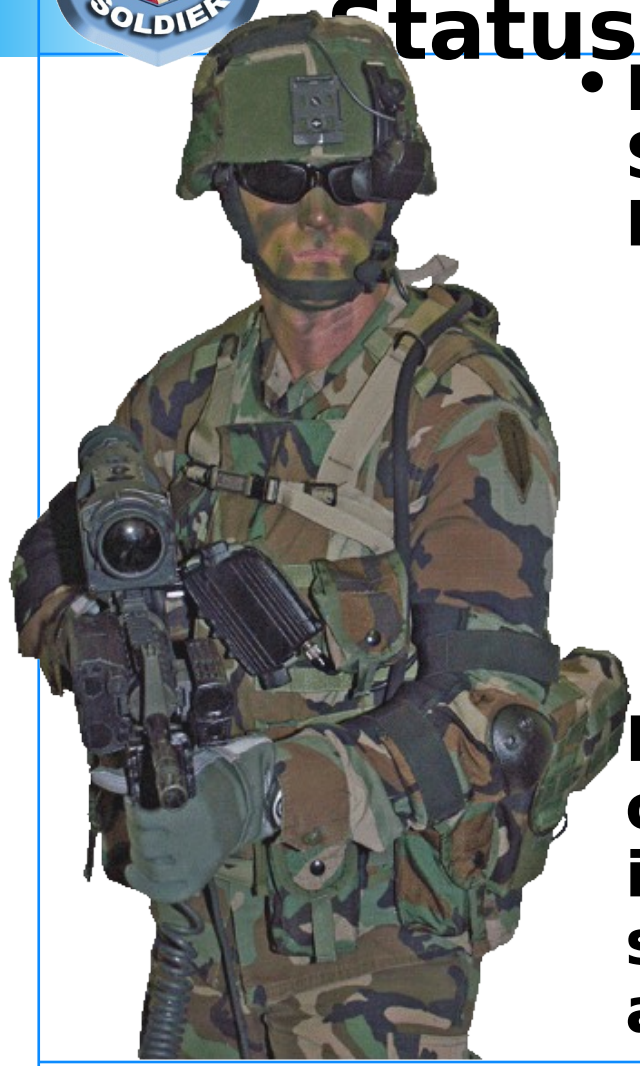
TG-1 is focused on information exchange between National Soldier modernization programs with the aim of achieving interoperability – 28 participating nations

- TG-1 Workgroups and Teams

The Overarching Principles Team	**Architecture**
Power	**C4I**
Weapon Systems	**Combat Clothing Individual Equipment and Protection**

Australia
Austria
Azerbaijan
Belgium
Canada
Czech Republic
Denmark
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Lithuania
Netherlands
Norway
Portugal
Romania
Slovakia
Slovenia
Spain
Sweden
Switzerland
Turkey
Ukraine
United Kingdom
United States

Land Warrior Program Status



- **Land Warrior has completed Spiral 2 development and User Field Testing**
  - ➤ Engineering Development Tests completed in October
  - Side-by-Side evaluation completed last week
  - LW could be delivered in early FY06 to one Battalion in a Stryker Brigade
- **Land Warrior has been optimized for joint or global interoperability by use of standard interface protocols and a modular approach**

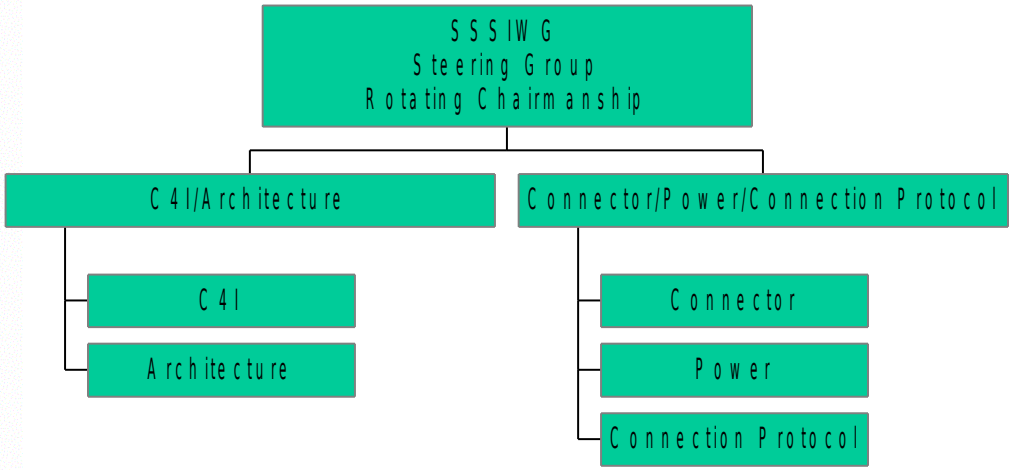
NATO TG-1 and SSSIWG

- **Why are we standardizing?**
  - We live in a world of joint and coalition operations
  - Benefits of interoperability and supply chain cost reductions
- **A Symbiotic Relationship – Topical Group 1 (TG-1) and Soldier Systems Standardisation Industry Working Group (SSSIWG)**
  - NATO TG-1 provides doctrine and guidance
  - SSSIWG finds the practical solution within Industry

"The objective of this SSSIWG is to promote the adoption of common standards of interface, architecture and equipme modules, in order to increase interoperability including compati interchangeability, and commonality and to reduce cost to the mutual benefit of the members. "

GENERAL DYNAMICS
C4 Systems

SSSIWG Organization

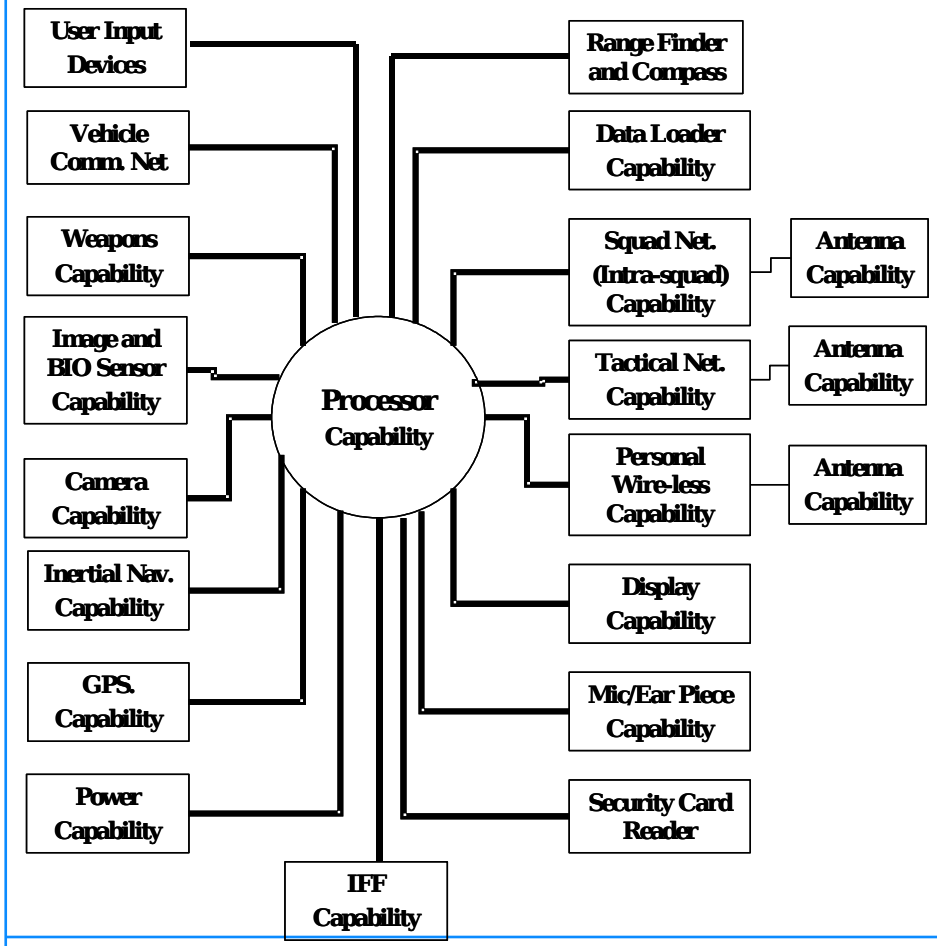


U.S, U.K, Germany, Italy, Norway, Netherlands, + France pending

- SIX countries currently members and another being added – Currently chaired by Thales Norway (rotating assignment)
- Five subgroups that mirror TG-1 initiatives

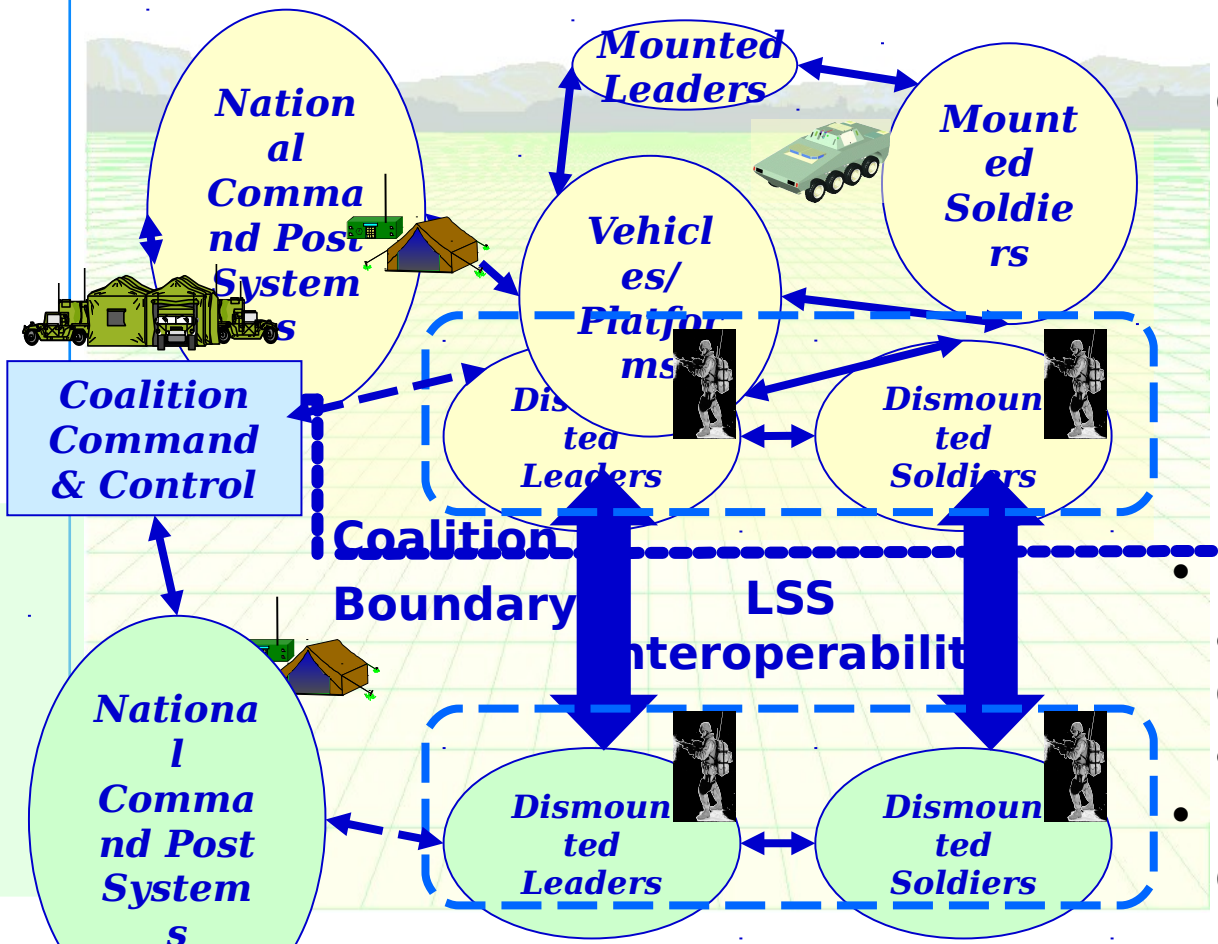
TG-1 and SSSIWG - A Common Architecture

Merged TG-1 and SSSIWG Architecture View



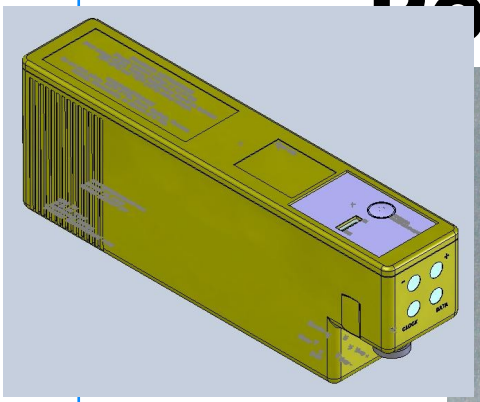
- **Both TG-1 and SSSIWG have polled their membership to arrive at a list of common components for a Dismounted Soldier System (DSS)**
- **Identification of general system components is complete**
- **SSSIWG will find a way to group components into defined subsystems**
  - These are first targets for standardization

TG-1 Guidance – Interoperability



- Lower echelon interoperability across coalition boundaries is necessary
  - Position report
  - Tactical features on map
  - Alert/warning message
  - Medevac request
- DSS interoperability applies only to dismounted soldiers and leaders
- DSS interoperability does not eliminate need for up-echelon C2
- Classified communications not

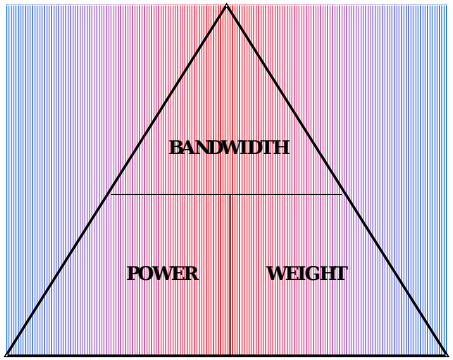
Standardization opportunities – System Power & Connectors



BATTERY, NON-RECHARGEABLE
Lithium / Manganese Dioxide
18V DC
Ultralife Batteries, Inc.
Newark, NY 14513
www.ultralifebatteries.com
DO NOT CHARGE, SHORT CIRCUIT, INCINERATE, OR MUTILATE THIS BATTERY OTHERWISE BATTERY MAY VENT OR RUPTURE, RELEASING TOXIC MATERIALS
WARNING FOR DISPOSAL

- **Voltage**
  - 10 to 32 volts under consideration by TG-1
- **Do not need to control form factor or capacity of power sources**
- **Connector and pinout**
  - Review and Selection process started in SSSIWG
- **Charger**
  - Must also be standardized

Interoperability – Challenges and Issues



Keep the Interfaces simple:

- Balance the 3 precious resources
  - Bandwidth
  - Power
  - Weight

- **DSS Data Interchange – agreeing on an efficient format**
  - ➤ VMF → ADatP3 via efficient transport (XML considered)
  - MIP for upper echelon interoperability
- **Voice**
  - VOCODER, Security, and Language Barriers are all issues
- **Radio**
  - No standard for waveform, spectrum, or security

A Look to the Future

TG-1

- Continued STANAG Development
- Evolution to Permanent NATO Group

SSSIWG – Arch/C4I goals for first quarter 2005

- With guidance from TG-1, C4I group will put detail behind a recommended interoperability standard and circulate it for comment
- The Architecture group will refine subsystem definitions and identify 3 or 4 candidates for interface standardization

Contact Information

Mike Stinson

Mike.stinson@gdds.com

Jason Regnier

jason.regnier@peosoldier.army.mil

Matt Gillis

Matt.Gillis@peosoldier.army.mil

Thank You!